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AGRICULTURE IN EARLY LATIUM

The Roman Campagna, today the most desolate plain of Italy, once nourished the masses that subdued Italy and through Italy the Mediterranean basin. Livy has left us only fragments of oral traditions, already centuries old in his day, to explain how that narrow region could beget such overwhelming power. That the tradition known to Livy truly represented the essential conditions we are now learning from every science that can be brought to elucidate the prehistoric problems. The geologists have finally succeeded after a century of indefatigable work in charting the processes that shaped the Latin plain, the archaeologists can now with a fair degree of satisfaction sketch the history of the peoples who took possession when the volcanoes subsided enough to permit men to dwell in Latium, and the new agricultural experimental stations are analyzing and demonstrating the peculiar properties of its soil. All are providing scraps of knowledge that will enrich the footnotes of future editions of Livy's first book.

The Latin plain in its present conformity is very recent, so recent that the last masses of volcanic ash probably post-date the pyramids of Egypt. The process of formation continued from long before the glacial periods and all through them.¹ More than fifty craters, from which the ash and lava poured, can still be found within twenty-five miles of the imperial city. Long periods of tranquility intervened when jungles grew up over the temporary surface, only to be buried under a new mass of ashes. The deep cuttings of the railways that run out of the eastern gates of Rome expose repeated layers of black and yellow soil lying between thick strata of tufa and ash; they mark the jungles of former intervals of rest. The present surface is not old. The present mouth of the Tiber has apparently silted in as much alluvium since Ostia lay upon the seashore in Sulla's day as the river carried down between the last great eruptions and Ostia's foundation. Though the Sabine hills immediately behind this plain show numerous sites² of habitation several millennia old—some being the homes of savages of the palaeolithic age—and though there are traces throughout the peninsula of the earliest Indo-European peoples of the *terramara*³ civilization (the men who in the third millennium introduced

¹ A. Verri, *Origine e Trasformazioni della Campagna di Roma* (1911).

² G. Pinza, *Monumenti Antichi*, vol. XV. This volume covers the whole of modern Lazio, which is more than twice the area of primitive Latium.

³ Peet, *The Stone and Bronze Ages in Italy*.

the use of copper), the oldest graves of the Forum, the Palatine, and of Grottaferrata cannot with certainty be placed earlier than the iron age, perhaps not more than a thousand years before Cicero. Archaeologists have doubted the accuracy of the reports⁴ published by the excavators who a century ago claimed that the burial urns uncovered below Castel Gandolfo were found under undisturbed layers of volcanic ash, but Pinza has called attention to the traditions of the Romans that in the early days of Rome ashes frequently fell upon the Alban Hills, and his own theory that Alba Longa was buried in the debris of an Alban eruption does not entirely lack plausibility.

The Latin plain is then of very recent date, and human cultivation of it of still more recent. It is well known that the volcanic ash that falls from Vesuvius is rich in phosphates and potash and that a moderate admixture of it in the soil acts as an excellent fertilizer. In fact, the Campanian farmer is not averse to an occasional eruption if only the volcano behaves with moderation. The later ash-strata of the Alban volcanoes had an abundance of these same constituents, though a large percentage of the original elements has leached out with time. Needless to say, however, the ash alone did not lend itself to cultivation at once, since grain needs an abundance of nitrogenous matter, and a solider soil than the ash at first provided. Before men could inhabit the plain we must posit a long enough period of wild growth, the invasion of jungle plants and forests which could create a sufficiently thick humus for agricultural purposes. Such forests did invade the plain. Not only do all the authors preserve the traditions of forests and sacred groves that are mentioned in the tales of the early kings, but Theophrastus⁵ still knew of Latium as a source of timber as late as the third century: "The land of the Latins is well watered, and the plains bear the laurel and myrtle and remarkable beech trees. Trunks are found that singly suffice for the keel beams of the great Tyrrhenian ships. Fir and pine grow upon the hills. The Circaean promontory is thickly overgrown with oaks, laurels, and myrtle." It is interesting to find that the beech then grew in the Latin plains, for now that the Campagna is parched and treeless it has withdrawn to the hills, if not to the mountains.

⁴ *Bull. dell. Inst.*, 1871, p. 34.

⁵ Theophrastus, *Hist. Plant.*, V, 8, 3. Cf. Pais, *Storia Critica di Roma*, vol. I, p. 627.

With this growth of timber from a subsoil which had many excellent qualities, a very rich soil was being formed for farming when once the Alban volcanoes should cease pouring out the flames that kept the hill peoples back in fear. There can be little doubt that the region was far from being semi-arid then as it is now. Today the grass parches brown in June, not to revive again till near October, and the wheat is hurried to a premature harvest in the middle of June. But Varro sets July down as the month of harvest in his day and summer rains are frequently mentioned in the classical authors. It would be hazardous to assume a theory of "climatic pulses" by way of explanation of this difference, and it is doubtful whether a mere two thousand years in the long recession of the glacial period could cause a perceptible change in temperature. The explanation of the change is no doubt to be found in the almost complete deforestation of Latium and the mountains behind. There can be little doubt that when the Sabine ridge from Praeneste to Monte Gennaro and the whole Volscian range were a thick forest instead of the parched white rocks that now stand out, the cool mountains caused condensations and precipitation over the plain when struck by the humid sirocco. Not only that, but the areas of forests still standing on the mountain sides and plains retained the water long and afforded a lasting subsoil supply and an abundance of nightly dewfalls which do not now exist when the last rains of spring leap off the bare rocks and flow away at once in torrents to reach the sea.

When therefore the early settlers pushed down into the Campagna and burned out "clearings" for farming (indeed the Terramara folk had then practiced systematic agriculture in the Po valley for many centuries), they found a soil remarkably rich, though not yet very deep, and the warmth and humidity that make the harvest heavy. The population in time grew dense, as would be expected from such conditions. There is nothing improbable in the tradition of the fifty villages that Pliny has preserved. The treasures now being gathered into the museum of the Villa Giulia from the ruins of sixth century Ardea, Satricum, Lanuvium, Gabii, Praeneste, Nemi, Velletri, Norba, and Signia, speak of an era of prosperity that no one dared imagine a few years ago. The ancient lords of these cities, which became malarial wastes before Cicero's day, decked themselves and their homes in the gold and precious stones of all the lands from the Baltic Sea to the Mesopotamian valley. Yet the wealth which made possible all this dis-

play did not spring from Latin industry or from commerce directed by Latins, if we may trust the evidence of archaeology now available. It was the produce of a rich soil cultivated with unusual intensity which paid for it, and kept alive a thick population such as would probably compare with the swarming tenancies of the Po Valley today.

There are numerous relics from that remarkable agricultural period still to be found in Latium, traces of drains, tunnels, and dams that are all too little known. The modern Italian farmer who hardly finds his land worth the merest labor of planting and harvesting fails to see how in a former day the owners could have secured returns for such enormous expenditure of labor, and, when asked to suggest an explanation for these ancient works, resorts to fantastic theories of mining and siege works. A convenient place to study the intricate draining system of that time is the district below Velletri. Here as De La Blanchère⁶ discovered some forty years ago the ground is honeycombed with an elaborate system of tunnels running down the slopes of the hills toward the Pontine marshes, *cuniculi* as he calls them, about 3 by 1½ feet, cut in the tufa a few feet below the surface and usually along the sides of the numerous ravines. The system involved hundreds of miles of excavating. De La Blanchère was unfortunately misled by the then prevailing "miasmatic" theory of malaria into believing that these tunnels were cut to drain the soil of pest waters. But they occur only on the slopes where the land drains all too readily without aid; they do not touch the stagnant Pontine marshes below. However, he also suggested as a possible theory what seems indeed to be the true explanation. They were apparently cut at a time of such overpopulation that every foot of arable ground must be saved for cultivation. By diverting the rain waters from the eroding mountain gullies into underground channels the farmers not only checked a large part of the ordinary surface erosion of the hillside farms but also saved the space usually sacrificed to the torrent-bed. I know of no other place where labor has been so lavishly expended to preserve the arable soil from erosion. The ground must have been precious indeed, and the population in sore need to justify such heroic measures for the insurance of the annual harvest. Similar systems are found in the valleys north of Veii and were probably built under

⁶ De La Blanchère, *Un chapitre d'histoire Pontine*, in *Mél. d'archéol. et d'hist.* (1882).

similar conditions. Indeed, the remarkable cutting 75 yards long at Ponte Sodo⁷ near the citadel rock of Veii through which the Fosso di Formello has ever since flowed seems to have been undertaken to save a few acres of the circling river bed for cultivation. Similarly the emissarium of the Alban lake, 1,300 yards long and 7 to 10 feet high, was cut through solid rock to save a few hundred acres of arable soil on the sloping edge within the crater. Even with the tools of modern engineers, that task would not now be considered a paying investment. Finally let the student of intensive tillage take a morning walk from Marcellina up Monte Gennaro through the steep ravine of *Scarpellata*. It is usually dry, but after a heavy rain the water pours down in torrents, carrying off what little soil may tend to accumulate. To save small alluvial patches in the course of this ravine the ancient farmers built elaborate dams of finely trimmed polygonal masonry that still withstand the torrents. The masonry is largely made of huge blocks weighing half a ton each and is in no wise inferior to the magnificent "cyclopean" masonry of Segni's town walls. And yet each of these dams could hardly save more than half an acre of arable soil.

It is impossible after surveying such elaborate undertakings to avoid the conclusion that Latium in the sixth century was cultivated with an intensity that has seldom been equalled anywhere. When, furthermore, we consider that the tools of that period were the spade and mattock, we may be sure that each man's allotment was very small, doubtless no more than the two jugera that Varro assures us sufficed for the support of the ancient Latin family. It follows that Latium supported a very densely settled population. With these facts in view the historian can understand whence came the armies that overran the limits of Latium and overwhelmed all obstruction when once they were set in motion, why Veii fell, why the burning of Rome was so quickly repaired, and why Campania called all the way to Rome for aid when threat-

⁷ Since Roman Veii stood near this Ponte Sodo (Solidum), it is probably this tunnel that later tradition assigned to the sappers and miners of Camillus' army. The stories of mining operations at the siege of Veii may account for the strange tales that connected the emissarium of Lake Albanus with the Veian siege (Livy, V, 15). The Romans do not mention the tunnel that drains Lake Nemi, though it is twice as long as the Alban one. It must have been cut before the temple of Diana became very important. The Valle Aricciana and the crater lake on the via Praenestina were also drained at an early date.

ened by the Samnites. It is very probable that when the soil began to show signs of exhaustion under this severe strain, an inadequacy to feed the population which is proved by the desperate methods mentioned above, the growing generations found it necessary to find more room, and that the expansion of the Latin tribe dates from this condition.

The elaborate engineering feats just mentioned are also interesting in providing further data regarding the social groupings of the people of that day. We have generally supposed that the early Latins built their homes together in village groups as the Indo-Europeans so generally did, as the more backward Italic peoples still did in Strabo's day, and as in fact Pliny implies in his tradition of the fifty Latin villages. There is indeed nothing to contradict this view, but we cannot well continue to posit a thoroughly democratic system of communities governed by commons of equal rights and well distributed land-ownership throughout, such as is found, for instance, in so many districts of France today. Small owners could never command the labor and resources required to build the dams found above Marcellina. And the extensive drainage shafts below Velletri, each of which pierced beneath hundreds of individual plots, could not be the work of small holders, nor is it likely that the political organizations of primitive democratic communities were capable of the initiative and sustained efforts that these imply. It is highly probable that such works of enterprise were undertaken by landlords who owned extensive tracts and could command and direct the labor of numerous tenants. It was no doubt such wealthy landlords that lived in the palaces of the hill towns, remains of whose gold ornaments and decorated plate have in some small measure been preserved here and there in unrifled graves. And it was probably a residue of such lords that directed the revolt against the usurping Etruscan princes in the sixth century and founded the Latin aristocratic republic with its powerful patrician senate.

We have remarked that the very intensity of the effort to reclaim small bits of eroding land was a proof of overpopulation and of a dangerous drain upon the productive qualities of the soil. The danger of soil exhaustion was peculiarly great in Latium for several reasons. As noticed above, the soil of Latium had not had a long time for accumulation. Along the extensive ridges of lava that radiate from the Alban hills toward the Anio, along the Appian way, and down toward Ardea, the surface was so hard

that soil-making was well nigh impossible. In such places the plow cannot now be driven. A mere scratch in the thin turf exposes the rock. In other places the conditions were more favorable since the ash and tufa are fairly productive for plants of powerful roots when covered with a humus of proper physical consistency and containing some nitrogenous matter. The surface was, however, new and therefore thin everywhere except in alluvial valleys. To add to the danger, the ash had fallen unevenly in knolls that time has not yet shaped down into a peneplane. In consequence the Campagna presents to the abrading rains of winter a very uneven surface, and when the Latin settlers had once stripped the turf and forest from that surface, the thin soil was in danger of washing away. It is not surprising that the Latin farmer found it necessary to entice the thieving rainwater into underground channels with the utmost speed. The surface loam was very precious and must be saved. With all their efforts, however, the exhausting harvests and the continual erosion did its work, and Latin agriculture was doomed, and with it the thick adornment of prosperous Latin villages. The situation could well be illustrated by the history of agriculture in the "white sand" districts of central Pennsylvania, where the traveller today passes through large areas of country almost uninhabited though well studded with barns and farmhouses now abandoned and falling into ruin. Here the settlers of two centuries ago found a rich but thin alluvial soil lying over a subsoil of sand. A century of reckless tilling gained great wealth out of the soil, but when that was exploited the land was of little value and the farmers left it. The situation in Latium never grew equally desperate, nor will it, since the subsoil there, even though slow to yield its wealth to the feeble roots of mere annual vegetation, is nevertheless comparatively rich. Yet, to judge from the constant cries of distress reported by the early books of Livy, the fifth and fourth centuries before our era were years of increasing exhaustion. To add to the desperate situation, the extensive forests which had insured rainfall well into the summer and had helped husband the moisture in the dry season were ever giving way to the axe. The pressing demand for land resulted in the clearing out of every tract that could be made arable; the abundant population laid large demands upon the forests for lumber; and commerce, as we have seen, carried Latin timber as far as Greece, now well stripped of trees. The deforestation of the Volscian mountains on the south of the Campagna re-

sulted in ruin of that whole region, for the rains washed the mountain sides clear of soil, carried down the detritus into the flat plain below, choked up the course of the streams and turned what was once the garden spot of several large cities into malarial marshes, a pest not only to its own dwindling population but also to villages as far north as Satricum and Asturæ. Norba, Cora, Setia, and Privernum dwindled down to unimportant hamlets. The same process of deforestation of the Sabine hills turned these also into bare rocks. Precipitation decreased, the dry seasons grew in length, the rain that fell found its quick course to the sea and Latium became gradually the semi-arid plain that it is today.

While this change was in process the farmers naturally sought for remedies. There was scarcity of manure because during the very intensive tillage when every acre was in use it had not been profitable to keep cattle since beef was rarely served as food, and horses were not in general use. When, however, many farmers found the loam too thin for further cultivation they had no choice but to seed their fields into pasture land, since a turf could at least protect whatever loam remained. A few oxen were needed as draft animals, and the wealthy lords of the city provided some market for the meat. Sheep were also in demand for wool, though this had generally come by barter from the mountain pastures that were fit only for sheep raising. Goats might be raised for milk and cheese.

The chief difficulty for the shepherd and herdsman was the lack of grass in August and September, which necessitated the laborious work of cutting leaves from trees. However, in the fourth and third centuries, when the neighboring mountain pastures of the Volscian and the Sabine hills fell within the political sphere of Rome, a profitable combination of summer and winter pastures became possible. Whether it was the Latin landlord who sought to tide over the arid summer by resorting to the mountain pastures in the dry season, or whether it was, as in the middle of the last century, the Sabine flock-owners who discovered green and warm winter pasturage for their flocks in the abandoned farms of the Campagna, we do not now know. But when once the discovery was made the Latin landlords were quick to seize the opportunity or to find a now profitable use for land that would no longer yield a reasonable harvest of grain. The earliest record we have of Roman slaves in great numbers shepherding on the mountains near Rome dates from the Second Punic war⁸

⁸ Livy 32, 26.

but since such notices are incidental and rare we need not assume that the custom was then of recent date. He who has had the misfortune of trying to make his way in a Ford from Tivoli to Rome against the endless procession of sheep going mountainward during the first week of July knows well what Horace⁹ meant when he wrote:

Jam pastor umbras cum grege languide quaerit.

This change, however, had serious consequences. Profitable sheep and cattle raising required capital, if indeed pastures were to be provided in two regions; and obviously, since the shepherding of a hundred sheep required little more labor than the care of half a dozen, the poor farmer with his small plot fell quite behind in the competition. Thus the small farmers gradually yielded ground to the master who could command the capital of large-scale ranching; and a general "enclosure" movement began at the expense of the grain fields. Again, since little skill was required, slaves were bought to care for the herds, and henceforth an area of a thousand acres, which in the days of profitable tillage had supported a hundred peasant families now fell to the charge of a few foreign slaves living at random. The depopulation of the Campagna proceeded apace.

Another industry presently hurried the process of crowding agriculture out of the Alban region. Here the abrasion of the soil had been most rapid because the slopes were steeper, but it was discovered that while the weak roots of annual plants like wheat and barley could no longer cope with the soil, grape vines and olive trees could readily nourish themselves even in the tufa and ash that remained. All that is necessary is to hack out and crush the tufa, plant the roots deep with a handful of loam for the plant to feed upon when young. When the plant grows strong it finds its own nourishment where grain fails in the struggle. From that time to this the vineyards and olive groves have never disappeared from the hills and valleys about the Alban lake. Obviously this industry also was developed by the men of wealth who could afford to wait five years for the first vintage and twenty years for the first returns of their investment in the olive groves.

It is customary to say that when Rome gained possession of Sicily in the first Punic war and thus inherited from Carthage the grain tithes of that island she destroyed agriculture in Latium by flooding the market of the Latin farmer with cheap grain. But

⁹ *Carmen*, III, 29, 20; cf. Varro, *R. R.*, II, 1, 16, Pliny, *Epist.*, I, 17.

is it probable that the Roman landlords, who after all controlled the State, would have adopted a policy so ruinous to their own interests? Or is it possible to suppose that they were so stupid as not to see what would be the result of bringing the Sicilian tithe to Rome? Is it not far more reasonable to suppose that the process we have sketched had actually progressed far by the middle of the third century, that Latium had already become a failure as a grainland, that the landlords had already turned to other industries, and that the Sicilian grain filled a need already keenly felt? It would seem then that the revolution in the agriculture of Latium had already progressed far before the first Punic war.

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